# DEPARTMENT OF CHEMISTRY AND ENVIRONMENTAL SCIENCE SEMINAR SERIES FALL 2022

# DATE: WEDNESDAY, SEPTEMBER 14, 2022 LOCATION: TIERNAN HALL - LECT. HALL 1 **TIME: 1:00PM-2:20PM**

### **GUEST SPEAKER**

Dr. Fa Zhang Research Director & Fellow in Analytical R&D Johnson & Johnson Consumer Healthcare Product Inc.

### TOPIC

Roles of Advanced Analytical Research in Consumer Healthcare Product Development

## ABSTRACT

Johnson & Johnson has numerous consumer healthcare products under development or in the market used by large population of customers. The products cover from new chemical entities, OTC drugs, monograph drugs, and cosmetic consumer products in many therapeutic areas in various formulation formats for multi delivery pathways. Large portion of the products is for topical applications and usually in semisolid or liquid forms for easiness of usage. The effective ingredients are absorbed transdermally. To maintain the desired physical, chemical, and pharmacological characteristics, the products usually contain complicated ingredients and need special manufacturing processes. The products are preferred to be kept at ambient condition for convenient applications. It became challenging to maintain their stability such as to reduce ingredient degradation or interaction. The products are also prone to contamination such as leachables from packages. Despite the analytical challenges inherently caused by complexity of the product formulations analytical research is vital at each product R&D stage for new idea evaluation, new product development, and marketed product maintenance. In this presentation, three case studies will be included for exemplification: (1) dereplication of feverfew antioxidative ingredients for skincare, (2) degradation chemistry of hydrocortisone and excipient interaction of pseudoephedrine, and (3) root cause investigation on unexpected discoloration of a solution product. The analytical outcomes benefit early ideation evaluation, new formulation/new production process development, and existing product quality control plus improvement to ensure regulatory compliance, to eliminate safety risk, to meet customer satisfaction, and to maintain public relationship. All the three studies have been published in professional journals.

# BIO

Fa Zhang has a Ph.D. degree in Organic Chemistry. He has above 5 years postdoctoral trainings mainly in the areas of organo-electrochemistry and bioanalytical chemistry in Queensland University, Duke University and the University of Oklahoma. Dr Zhang entered the industry by starting to work with American Cyanamid Company in US as a Research Chemist. Dr Zhang joined Johnson & Johnson in 1996 and he currently serves as a Research Director & Fellow in Analytical R&D of Johnson & Johnson Consumer Healthcare Product Inc. He is the head of Global Advanced Analytical Technology, a Center of Excellence of the company. Dr Zhang's research interests cover degradation chemistry, identification and control of impurity,

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contaminant, leachable/extractable, product trouble shooting and quality improvement, bioanalysis and metabolism, natural ingredient dereplication, new analytical strategy development, GMP/GLP analytical lab establishment and management. Dr Zhang is a member of ASMS. He has about 40 research papers published in peer reviewed journals including review article and book chapter. He has three patents in product formulation development. He gave more than 100 presentations in technical conferences. He is a selected reviewer for multiple professional journals.